WE CLAIM:

1. A high performance image projection apparatus, comprising:

a light source including at least one arc lamp having an arc gap dimension, the light source generating at least a principal ray; and

a liquid crystal display (LCD) panel for receiving at least the principal ray and generating an image, the LCD panel having a panel diagonal dimension of such a size that the arc gap dimension is two percent or less than the panel diagonal dimension.

2. The apparatus of claim 1 in which the arc gap dimension ranges from about one millimeter to about seven millimeters.

3. The apparatus of claim 1 in which the panel diagonal dimension is greater than about 50 millimeters.

4. The apparatus of claim 1 in which the panel diagonal dimension is about 380 millimeters.

5. The apparatus of claim 1 further including a projection lens for projecting the image on a screen at a magnification ratio of less than about 10X.

6. The apparatus of claim 5 in which the magnification ratio ranges from about 4X to about 10X.

7. The apparatus of claim 5 in which the projection lens includes 5 or fewer elements.

8. The apparatus of claim 1 in which the LCD panel includes amorphous silicon thin film transistors.

9. The apparatus of claim 1 in which the LCD panel has an operational life of at least 50,000 hours before the image displays a substantial color degradation.

10. The apparatus of claim 1 in which the LCD panel has an SXGA or greater resolution.

11. The apparatus of claim 1 further including a projection screen and in which the image projection apparatus is a rear screen projector.

12. The apparatus of claim 1 further comprising an input Fresnel lens that receives and diffracts at least the principal ray from the light source causing at

least the principal ray to propagate through the LCD panel at an optimal ray angle that causes the image to have a contrast ratio of at least 1,000:1.

13. The apparatus of claim 12 in which the optimal ray angle is in a range of from about zero degrees to about 10 degrees from normal to a major surface of the LCD panel.

14. The apparatus of claim 12 in which the input Fresnel lens has an optical center and the principal ray enters the input Fresnel lens at a position offset from the optical center.

15. The apparatus of claim 12 further including an output Fresnel lens that receives the principal ray exiting the LCD panel at the optimal ray angle and diffracts the principal ray such that it exits the output Fresnel lens substantially perpendicular to a major surface of the output Fresnel lens.

16. The apparatus of claim 1 in which the light source generates light rays that propagate through the LCD panel at a cone angle that is less than about ±6 degrees.

17. The apparatus of claim 1 in which the light source includes 2, 3, or 4 arc lamps.

18. The apparatus of claim 17 in which the light source further includes a fold mirror associated with each of the arc lamps, the fold mirrors coacting to direct along parallel pathways light rays propagating from the arc lamps, thereby forming a substantially collimated light bundle.

19. The apparatus of claim 18 in which the fold mirrors form a pinwheel shaped mirror configuration.

20. The apparatus of claim 18 further including a flyseye lens array light homogenizer system that receives the substantially collimated light bundle and produces homogenized light rays.

21. A method of modifying a direct view LCD panel to provide an LCD light projection panel suitable for use in an LCD projection display, comprising:

providing a direct view LCD panel including a backlight and LCD substrates mounted to a frame;

removing the LCD substrates from the frame;

removing at least one of a wide viewing angle film and a polarizer from the LCD substrates to produce a modified LCD panel;

providing a new frame; and

mounting the modified LCD panel on the new frame.

22. The method of claim 21 further including coupling at least a wide band rotator to the modified LCD panel.

23. The method of claim 21 further including providing first and second substrates, and mounting the first and second substrates on the new frame adjacent to and on opposite sides of the modified LCD substrate.

24. The method of claim 21 in which the LCD substrates further include a polarizer adjacent to the wide viewing angle film and in which removing at least a wide viewing angle film from the LCD substrates further includes removing the polarizer to produce the modified LCD substrate.

25. The method of claim 21 in which the LCD substrates further include a circuit board and in which mounting the modified LCD panel on the new frame includes mounting the circuit board on the new frame.

26. The method of claim 21 in which the backlight propagates light through the direct view LCD panel in a first direction and in which light from a light source propagates through the LCD light projection panel in a direction opposite to the first direction.

27. An image projection apparatus, comprising:

a liquid crystal display (LCD) panel having a diagonal dimension greater than about 50 millimeters that is intended for direct viewing of images propagating from the LCD panel in a first direction, the LCD panel including photoconductive thin film transistors (TFTS) for generating the images and a black mask for preventing ambient light rays propagating in a second direction from causing photoconduction of the photoconductive TFTs; and

a light source generating light rays that propagate in the second direction through the LCD panel for projecting the images without causing photoconduction of the photoconductive TFTs.

28. The apparatus of claim 27 in which the LCD panel further includes LCD substrates from which at least one of a wide viewing angle film and an anti-glare finish have been removed.

29. The apparatus of claim 27 in which the LCD panel further includes LCD substrates and in which at least one wide band rotator is coupled to the LCD substrates.

30. The apparatus of claim 27 in which the LCD panel has a diagonal dimension and the light source includes an arc lamp having an arc gap dimension that is about three percent or less of the LCD panel diagonal dimension.